

IN THE SPECIFICATION

1. Please amend paragraph [0027] as following:

[0027] As can be seen in FIG. 2, the droop angle monotonically increases with the operation time, while the rate of the increment rate of the droop angle decreases with the operation time. In particular, the overall profile of the droop angle curve exhibits a characteristic of a burst growth followed by a slow growth. For example, the droop angle monotonically increases from the initial value of 0° degree to around 0.81° degree after 10,300 hours of operation. However, the droop angle increases from 0° degree to around 0.5° degree after the first 170 hours of operation. That is, within the 10,300 hours of time scale, the droops angle achieves around 62% of the total angle within the first less than 2% of the total time period. And during the following 82% of total time period, the droop angle changes less than 38%.

2. Please amend paragraph [0029] as following:

[0029] In order to improve the lifetime of the microstructure, the deformable element is strained in compliance with the theory as discussed above prior to operation. The straining can be performed in many different stages of fabrications of the spatial light modulator. For example, the straining can be performed before or after assembling the microstructure, or before or after packaging of the spatial light modulator. If the straining is performed before joining the two substrates, an electrode can be provided for actuating the micromirrors. And it can also be performed after the spatial light modulator has been installed into a digital display system. In an embodiment of the invention, the deformable element (e.g. the hinge) is deformed to a deformed state by rotating the mirror plate attached to the hinge to the deformed state. The deformed state can be the ON state of the micromirror. For example, the ON state can be a state wherein the mirror plate is rotates to an angle of from 10° to 18° degrees relative to a state when the mirror plate is flat. Alternatively, the deformed state can be an intermediate state between the ON and OFF state. For example, assuming that the ON and OFF state angles corresponding to the ON and OFF state are respectively 18° degrees and 0° degree, the intermediate state can be a state wherein the mirror plate is rotated to an angle of from 0° to 18° degrees. In another embodiment of the invention, the deformed state can be a negative OFF state, wherein the mirror plate is rotated to an angle of from -0.1° to -8° degrees. The minus sign "-" represents that the mirror plate is rotated in an opposite direction to the OFF state relative to the ON state.

3. Please amend paragraph [0032] as follows:

[0032] For the example as shown in FIG. 2, the particular straining time period can be 20 minutes or more, or from 20 minutes to 24 hours, or 24 hours or more, or 170 hours or more. After around 10 hours

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of straining, the amount of plastic deformation acquired lifts the OFF state angle before starting by 0.2° degrees – that is the difference between the ON and OFF state is reduced by 0.2° degrees. Assuming the tolerable difference between the ON and OFF state for the micromirror is 0.6° degree or less (in practical operation, the tolerable difference is often much smaller, e.g. 0.25° degree), the life time for the micromirror device without straining would be around 500 hours. After straining, the life time can be more than 10,300 hours because the difference between the new OFF state and the ON state is far below 0.6° degree over the 10,300 hours. Even though extra plastic deformation may still be developed in the deformable hinge during operation afterwards – causing variations of the states, the plastic deformation increases slowly according to the theory. As a result, the difference between the ON and new OFF state is within a tolerable range and does not resulting in device failure over a significantly long operation time (e.g. 10,300 hours or more).

4. Please amend paragraph [0035] as follows:

[0035] As a way of example, the straining time for the deformable hinge can be range from 3 minutes to 500 hours or preferably from 1 hour to 24 hours. The straining of the deformable hinge can be expedited by thermal treatment. For example, if the straining is performed before bonding the two substrates, the deformable element can be heated to a temperature of from 80° degrees to 300° or more, or from 300° to 500° degrees or more. If the straining is performed after the two substrates are bonded together during a packaging stage, the maximum tolerable temperatures of other materials, such as sealing materials and lubricant or coating agents (e.g. self-assembly material for reducing stiction) applied to the surfaces of the micromirrors need to be considered. In this situation, the temperature for straining the deformable elements is below the maximum temperature allowed by these materials, such as a temperature of from 80° to 120° degrees, or from 120 to 145° degrees or from 145° to 300° degrees. In selecting a proper heating temperature, other properties of the micromirror device need to be considered. For example, the selected heating temperature should be lower than the maximum tolerable temperature without causing defects or device failure.

5. Please amend paragraph [0039] as follows:

[0039] As can be seen in figure 3a, the OFF state of the micromirror obtained an initial droop angle of around 0.4° degrees corresponding to an amount of plastic deformation acquired during the 60 hours of pre-straining. After the pre-straining, the micromirrors in the ON or “white” areas of the spatial light modulator still develop plastic deformation, causing the droop angle of the micromirrors to increase over time. Meanwhile the developed plastic deformation relaxes over time, causing the droop angle to

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decrease. The difference between the droop angles for the micromirrors held in the ON and OFF states increases over operation time. FIG. 3b illustrates the same plot in FIG. 3a in a wider operation time range.

6. Please amend paragraph [0040] as follows:

[0040] Turning to FIG. 3b, because the "initial" OFF state is "lifted" to an initial droop angle of around  $0.4^{\circ}$  degree, the difference between the ON and OFF state after 10,000 hours of operation is less than  $0.5^{\circ}$  degree, even though the droop angle for the micromirrors held in the ON state increases due to further acquisition of plastic deformation in operation. As a comparison, assuming the maximum tolerable change in droop angle is  $0.5^{\circ}$  degree for the micromirror device of the spatial light modulator, the lifetime for the spatial light modulator without straining would be less than 170 hours. However, the lifetime of the spatial light modulator with straining is longer than 10,000 hours.